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ABSTRACT

This study was aimed at determining whether there was a difference in attitude and achievement scores of undergraduate students enrolled in an instructional television (ITV) course when academic content was given three treatments: (1) by a regular faculty member who employed formal lecture- reading mode, (2) role player who employed formal lecture-reading mode, (3) trained communicator who employed informal lecture-reading mode. Two different ITV lessons were presented to three groups of 30 each with attitude measured by scores on a 14-item Likert device forcing responses re: ITV presentors, and achievement measured by scores on a 20-item multiple choice test to assess recall on lesson content. Reliability was conducted by split half, validity by concurrence; data by one way analysis of variance, and design was experimental. Results in two lesson runs, conducted to correct for maturation, produced hypothesis rejection for attitude (no significant difference regardless of treatment) and split results for achievement (a significant difference favoring the trained communicator in the first lesson run and no significant difference in the second). (Author)

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A Study of the Effects of a Trained Television Communicator on Undergraduate Attitudes and Learning

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A MAJOR APPLIED RESEARCH PROJECT
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Abstract

This study was aimed at determining whether there was a difference in attitude and achievement scores of undergraduate students enrolled in an instructional television (ITV) course when academic content was given three treatments: (1) by a regular faculty member who employed formal lecture-reading mode, (2) role player who employed formal lecture-reading mode, (3) trained communicator who employed informal lecture reading mode. Two different ITV lessons were presented to three groups of 30 each with attitude measured by scores on a 14-item Likert device forcing responses re: ITV presentors, and achievement measured by scores on a 20-item multiple choice test to assess recall on lesson content. Reliability was conducted by split half, validity by concurrence; data by one-way analysis of variance, and design was experimental. Results in two lesson runs, conducted to correct for maturation, produced hypothesis rejection for attitude (no significant difference regardless of treatment) and split results for achievement (a significant difference favoring the trained communicator in the first lesson run and no significant difference in the second).

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A STUDY OF THE EFFECTS OF A TRAINED TELEVISION COMMUNICATOR ON UNDERGRADUATE ATTITUDES AND LEARNING

Douglas O. Wardwell

Central Connecticut State College

Introduction

Context of the Problem

The role of instructional television (ITV) has been closely scrutinized in relation to conventional instruction since it became a major vehicle to transmit learning in 1954. Schramm (1962) summed up 393 experimental comparisons on television vs. classroom teaching reporting that in 255 of these comparisons there was no significant difference in achievement among students. Pflieger and Kelley (1961) summarized the results of a three-year national program in which 200,000 students from 800 public schools took part, finding that the majority of comparisons showed no significant differences in achievement. Hall (1962) conducted comparative research utilizing a sample of 30,000 elementary and secondary school students in which some subjects received ITV instruction and some conventional instruction. Results, like previous findings, revealed no significant differences in achievement.

It has been argued that intelligence quotient (IQ) makes a difference in learning through ITV. In a study with students of high IQ (Gordon, Engar, and Shupe, 1963), it was found that the television mode of presenting academic content did not maintain interest over a period

of time. Hovland, Lumsdaine, and Sheffield (1949) found that brighter people are less influenced by persuasive communications than those with lower intelligence. But Kanner (1958) in comparing the achievement of high vs. low aptitude Army trainees enrolled in an ITV course found that this form of instruction produced as high a score as conventional means among both groups.

There is conflicting opinion relative to student acceptance of ITV at varying grade levels. Schramm's (1962) investigation seems to indicate that as grade level increases students seem to learn less from ITV and that positive opinion towards it declines. In making 595 comparisons of grades 6 through college, Schramm noted that whereas 55 percent were in favor of ITV at lower grade levels, only 11 percent were in favor on the college level. The remainder favored conventional instruction.

Research indicates there is no correlation between learning from ITV and liking it. Whiting (1961) compared the grades and attitudes of college students taught a course in history and anthropology by ITV and conventional lecture method with the result that students who were relatively neutral toward ITV made higher grades in achievement tests than those who favored it. This finding induced Whiting to conclude that attitudes may reflect one aspect of teaching and learning another, as it applies to instructional television. Whiting also found that a student's attitude toward instructional television is related to how useful it is in terms of intellectual standards and how pleasant the experience will be.

The problem is to design qualitative research which makes ITV and those who communicate on it more effective. A report for the Department of Health, Education, and Welfare underlines this need (Chisholm and Ely, 1974). The fact that trained communicators and actors have for years effectively communicated information and captivated audiences on radio, television, and film has not influenced researchers to examine their possible use in higher education. A review of ERIC, psychological journals, dissertations, and master abstracts, plus A-V communication and public opinion journals documents this fact. However, private foundations (Carnegie, 1972) have challenged education to find answers to more effective communications in the technologies of today.

Within the context of the problem, a comparative study was initiated to assess the attitudes and achievement of college students toward a trained communicator vs. a television teacher who presents academic content over the medium, the former utilizing a conversational reading mode and the latter utilizing a lecture reading mode. In so doing, a role player (who is also the trained communicator using the lecture reading mode) was introduced as a neutral source to guard against possible bias and/or discrepancy differences in the two styles of presentation. Academic content remained the same. Only the style of presentation varied to assess differences in the way students evaluated the presentors and what they learned over instructional television.

Statement of the Problem

Do college students enrolled in an introductory course in psychology presented over instructional television differ in their atti-

tudes and achievement when the same academic content is presented by a television teacher (regular faculty member lecturing formally), a role player (professional speaker lecturing formally), and a trained communicator (professional speaker teaching informally)?

Review of the Literature

Because the medium of instructional television contrasts sharply with conventional modes of instruction, there have been countless questions tendered regarding student attitude and achievement. Hoban (1956) suggests a loss in the effectiveness of instruction if the only independent variable is a television communications system lacking feedback opportunity. Zettle (1967) found that feedback is a moderator affecting attitudes and classifies them into categories such as direct (in which the viewer has opportunity to react immediately to the communicator) and direct delayed (in which the viewer waits until the end of the telelecture to respond to the communicator). The significance of feedback was documented in studies conducted among Army trainees where feedback opportunity was allowed and denied different groups of students (Southwestern Signal Corps Training Center, 1953). It was found that when trainees were denied feedback opportunity, ITV attitudes were negative. When feedback was allowed, attitudes were positive.

There are studies indicating that group norms and peer pressure have a decided influence on attitudes. Hovland and Weiss (1951) in experiments with prestigeful communicators among groups of college students found that the audience anticipated receiving approval (reward) if the speaker's position was adopted and that how others accepted the speaker's position influenced individual attitudes.

The teacher experience factor seems to have a negligible effect on the achievement or attitudes of college students toward ITV. Research in which some classes were taught by graduate students and some by experienced or master teachers reveals no significant differences in achievement (Myers, Weidman, and Cavert, 1958). Myers (1961) found that graduate students teaching via ITV achieved attitude rankings by college students which were equal to experienced teachers. Kanner (1958) in conducting attitudinal research in which Army trainees were subjected to classes taught by experienced vs. inexperienced teachers found no significant differences in achievement. Students scored equally well, no matter which person communicated the message.

There is some evidence that believability and sincerity on the part of the communicator are qualities which elicit positive attitudes in an audience. Merton (1949) conducted a study in which a random number of people were selected to gain opinions toward Kate Smith's 18-hour radio World War II bond selling marathon; the majority concluded that it was her sincerity which convinced them to respond. They believed what she said. Hovland and Weiss (1951) conducted elaborate studies on the credibility of the communicator with college students. They found in repeated evaluations that conclusions by an audience are significantly affected by variations in the source. The higher the credibility of the communicator, the higher the rating by the audience. The possibility that some communicators or actors possess an ability to transmit sincerity, believability, and credibility to an audience is a matter of history. Psychiatry News (1973) reported that during a continuing education training conference an actor coached by

Dr. Donald Naftulin of the University of Southern California was introduced as an authority on the application of mathematics to human behavior. Although he used contradictory statements and double talk interspersed with humor and meaningless references, the actor convinced three different groups of professional educators, educational administrators, psychiatrists, and social workers of his credibility. In a satisfaction questionnaire following the lecture, nearly all respondents felt the fake authority figure stimulated their thinking and presented material in a well-ordered fashion.

There are many factors governing acceptance and rejection of instructional television among college students. Rosenbaum's (1953) study suggests that heightened anxiety contributes to an acceptance of a communication. Schramm and Chu (1967) found evidence of the Hawthorne Effect (an increase in interest on the part of ITV students to do well when the medium was first introduced) while Dyer, Fuller, Seibert, and Shanks (1958) reported that Purdue students taught calculus by ITV became less favorably disposed toward the medium with time. Hovland (1953) conducted research aimed at motivation to learn and believed learning was dependent on whether the audience was captive or voluntary. Rapaport (1942) in presenting students with communications associated with positive and negative associations, found that pleasant experiences were remembered better than unpleasant ones, whereas Watson and Hartman (1939) found that communication which supports the subject's attitudinal frame was retained better than material opposing it.

But what of the presentor of instructional material--what qualities must he possess to be an effective communicator? Dale (1953) postulated

that he should know the symbols, cues, and stimuli to which the other person will react. King and Janis (1953) in research comparing oral readings by college students in an unaltered version and improvised version, found that the improvisation factor is a crucial one leading to more persuasive communication. Fritz, Humphrey, Greenlee, and Madison (1955) surveyed all ITV programs utilized by the United States Army to separate factors that seemed most effective in the communication process by administering attitude questionnaires to target audiences. Results showed that an informal and extemporaneous presentation received higher ratings than straight lectures in which communicators read material. Brandon (1956) attempted to determine which mode of presentation college students would prefer by transmitting academic content three different ways (straight lecture, interview, and panel). Results showed that students preferred the less rehearsed interview or panel situation although there was no significant difference in achievement regardless of the method used.

But inherent in the medium, there are other factors to be considered as it pertains to audience communication. One factor is eye contact vs. lack of eye contact. Westley and Mobius (1960) tested this theory by transmitting three different TV lectures to 51 college students who saw a program on computer applications. In one group the instructor had eye contact 40-60 percent of the time; in another, 10 percent of the time; and in another, 90 percent of the time. Pictures were taken of student interest at varying points of time, and an information quiz was administered following the lecture. Results showed no significant differences in attention, interest, or learning that could be attributed to eye contact.

There is conflicting opinion as to whether production techniques, which are part of the television process, significantly contribute to audience learning or attention. Ellery (1959) used a technique called dollying (moving the camera toward or away from the communicator), cutting (quick cut from one shot to another), and limbo lighting (lighting the communicator with hard, sharp light vs. soft light) in a speech course transmitted via ITV to college students at Wayne State University. Th result was no significant difference in learning. Aylward (1960) utilized video editing (selective cutting of video material), varied background (sets in back of the communicator which were distracting or non-distracting), and varied picture size (long shot of the communicator vs. a close up) in a public speaking course given to college students via ITV at the University of Maryland. When a multiple choice attitude quiz was given immediately following the TV lecture, students scored the program in which video editing was employed higher than programs having no editing; they scored programs having non-distracting background higher than those with a distracting one, but picture size had no bearing on attention. Morrisseau's (1973) summary findings for the second year of the educational TV program "Sesame Street" in which a large number of production effects were utilized revealed a definite information gain among most all students following viewing of the program series. Yet, in higher education, there is a demonstrated reluctance in faculty attitude toward the use of such techniques--a fear that the medium may dictate the message.

Schramm (1967) postulated that an important variable in ITV's future is the kind of teaching used in communicating content. In higher

education most academic content on instructional television is presented by faculty members who become TV teachers. Underhill (1969) conducted a national survey of TV teachers, finding that they are generally poorly trained and relatively inexperienced in ITV use but generally more favorably disposed toward it than non-users. At the University of Nebraska during the fall semester of 1974, trained communicators (actors) were used exclusively rather than academicians to initiate a new learning program in which students were totally taught courses over ITV. Although an in-depth research study was conducted prior to the decision (National Institute of Education, 1974), more studies are required before such a concept will be seriously entertained in higher education. For this reason then, it is evident that because affective research (opinion, attitudes, and feelings) toward communication is tremendously outbalanced by a preponderance of cognitive research (achievement and learning) more research is required in the affective domain. Remmers (1954) postulates that attitudes (the way individuals and groups feel about various aspects of the world) may be more determinative of behavior than cognitive understanding is worthy of consideration. There are few logical arguments to oppose such constructs and every reason to agree with Dr. Edmund Sheazer, Jr., (1974) that we need to stimulate output in the affective domain and measure performance.

Statement of Hypothesis

With these factors in mind, therefore, the following hypotheses were offered:

Given an instructional television presentation in an introductory course in psychology in which one group of students

(Group 1) view the television teacher, a second group of students (Group 2) view a role player, and a third group of students (Group 3) view a trained communicator:

H_1 Student attitude toward the trained communicator will be significantly more positive than it will be toward the television teacher and/or role player.

H_2 Student learning will be the same regardless of whether students watch the television teacher, role player, or trained communicator.

Rationale for the Hypotheses

1. For H_1 the rationale is logical and is based on the high public acceptancy level of actors and trained communicators as evidenced in television program ratings. Because of potential experience factors learned by broadcast media arts specialists (e.g., eye contact leading to attentiveness, physical movement leading to interest, use of visuals focusing attention, pacing of material and relaxed manner creating an easy situation), it is logical that viewers might identify more with him than an academician. The fact that college students are fed a constant diet of commercial television programs and have established critical norms for effective/ineffective communicators is another factor contributing to possible higher ratings for an individual familiar with the medium.

2. For H_2 the rationale is empirical since a review of research literature has established support for the premise that there will be no significant difference in learning by college students regardless of who presents content over instructional television (Schramm, 1962). Previous research (Myers, 1961) has already established the fact that experienced or substitute teachers are equally effective in an ITV lecture situation

where the educational goal is to disseminate information for immediate retention. They are also equally effective in achieving similar levels of affective behavior among college students. But the present study introduces in addition to the academic presentors (e.g., TV teacher), a role player and trained communicator predicting that even though college students may like them, they may not necessarily learn more. Factors governing this possibility may be the new method of learning (e.g., instructional television) in which the mode takes precedence over the communicator, the formal learning environment which may dilute barriers to communication sources, or external factors such as peer pressure.

Limitations of the Study

1. Unlike hundreds of previous studies dealing with the achievement of students when subjected to ITV instruction vs. conventional instruction, the present study is a comparative one assessing both attitude and achievement of college students toward ITV communicators. In that respect, therefore, only students enrolled in an ITV course were requested to respond.

2. These enrollees constituted the sample. They represent students who are not psychology majors and who may have enrolled in the course only because it is one of two offered to fulfill general liberal arts requirements. Therefore, it could not be assumed that all students in the sample would exhibit a positive attitude toward the experience.

3. Since freshmen and sophomores may register for the ITV course, a bias potential existed in that sophomore students may tend to influence freshmen attitudes (positively or negatively) toward the course or instructor. Thus, a peer group pressure was a potential control variable but one which was not controlled in this study.

Operational Definitions of Variables

1. Instructional television (ITV). An electronic method of presenting academic content to students using pictures and sound which was transmitted and displayed on television receivers.

2. Academic content. The material prepared by the educational resource person which in this particular study was the television teacher.

3. Script. The particular format in which academic material was assembled in narrative form for utilization by TV teacher, role player, trained communicator, and those charged with technical production of the ITV lesson.

4. Lecture-reading mode. A formal style of delivering academic content in which the communicator partially read from a script.

5. Conversational-reading mode. An informal style of delivering academic content in which the communicator seldom appeared to read from a script.

6. Television teacher. An academic faculty member of the psychology department at Central Connecticut State College who has taught an introductory course in psychology over instructional television 11 years utilizing a lecture-reading mode with appropriate visuals to college students. He has had no formal media training or professional commercial broadcast experience.

7. Trained communicator. An individual who has formal media training and professional commercial broadcast experience and is the director of television at Central Connecticut State College. He has limited knowledge of academic content in the introductory course in psychology presented over ITV but took such content as supplied by the television

teacher and presented it using a prompting device and appropriate visuals, in a conversational mode to college students enrolled in the course.

8. Role player. The same individual as the trained communicator who has limited knowledge of academic content presented in the introductory course in psychology over ITV but who took content as supplied by the television teacher and presented it in the same way as the television teacher using lecture reading mode, a prompting device, and appropriate visuals to college students enrolled in the course.

9. Prompting device. An instrument with two cylinders onto which seamless paper is attached. Written content is typed on the seamless paper and attached to the cylinders which can be advanced or reversed by a hand held motor regulator controlling speed. The prompter was attached or suspended directly above the television lens and allowed a communicator to read material without giving the impression of reading, depending on his skill.

10. Attitude. The positive or negative written feelings or opinions exhibited by college students toward three instructional TV presentors (television teacher, role player, and trained communicator) to be measured by a 14-item Likert type device with item intervals given numerical weights (e.g., A=5, B=4, C=3, D=2, E=1). Since there was no standardized attitude test with the exception of Osgood's Semantic Differential, the test was self-designed.

11. Achievement. (A) The numerical score obtained by a student on a 20-item multiple choice test designed by the TV teacher to measure academic content covered in television lesson #1. (B) The numerical

score obtained by a student on a 20-item multiple choice test designed by the TV teacher to measure academic content covered in television lesson #2.

Restatement of the Hypotheses

When college students are requested to rate television presentations delivered by a TV teacher, role player, and trained communicator, they will rate the trained communicator in more positive terms but will learn equally well from TV teacher, role player, or trained communicator.

Significance of the Study

Although there has been concern voiced by academicians that trained communicators or actors might displace some TV teachers at institutions of higher education, most concern has been confined to opinion and diatribe lacking objective analysis. Conversely, those individuals trained in communication techniques who have argued for utilizing actors to present academic subject matter have contributed to debate by not designing research constructs to test their theory. This study provides some empirical data regarding the attitudes students have toward TV teachers and trained communicators and the comparative degree of learning under control conditions.

In addition, the study affords college students paying tuition fees for instructional television courses, a means whereby they can register feelings about those who present ITV material. Findings should enable individuals administering and/or directing media operations at our institutions of higher education to take a new look at the manner in which instructional television programs are presented to college students by experienced vs. inexperienced presentors. Data results should assist academic deans charged with finding the most effective methods of in-

struction to request closer scrutiny of the theory of using trained communicators by faculty and student populations.

Therefore, it is anticipated as a result of this study that differences which may exist between liking and learning from trained communicator, role player, and television teacher may be correlated with the technique of presenting course material (e.g., lecture-reading mode vs. conversational-reading mode) and the communicator's use of the medium. Such data should provide a more logical base for determining future research direction in the use of ITV technology.

Methods

Subjects

From a total student population of approximately 4,365 first and second year college students at Central Connecticut State College:

1. Two-hundred and seven self-selected students registering for an instructional TV course in psychology in the spring semester of 1975 became the sample.

2. Each student in the sample was assigned a number with which a table of random numbers was used to randomly assign each student to one of three groups yielding a total of approximately 30 students (S's) in each group.

3. Only the three groups of S's were given the three treatments. The remaining 117 students enrolled in the course, but not selected to be in Groups 1, 2, or 3 of the sample, were given a treatment at random. Their scores on written instruments were included to assess reliability of the tests utilized.

Tasks

When the students in the sample came for the treatments (January 21 and February 27, 1975), students in each group were requested to proceed to rooms previously designated as viewing classrooms where ITV programs were to be received. Following viewing of presentations by one of three presentors (TV teacher, role player, or trained communicator) each student was required to respond to an attitudinal and achievement test to measure attitude toward the communicator and learning of lesson concepts.

In the first lesson run, January 21, 1975, S's in Group I were given Treatment 3 (trained-communicator condition), S's in Group II were given Treatment 2 (role-player condition), and S's in Group III were given Treatment 1 (television-teacher condition). Treatment was reversed in the second lesson run, February 27, 1975, so that S's in Group I were given Treatment 1 (TV-teacher condition), S's in Group II were given Treatment 3 (trained-communicator condition), and S's in Group III were given Treatment 2 (role-player condition).

To maintain constancy of the task situation, on both viewing occasions, the attitude test was preceded by the achievement test. Two ITV lessons were presented, one at the first of the semester and one nearly two months following to allow for maturation (e.g., changes in the attitude and learning of the target audience which may occur over time). No pretest was assigned to avoid telegraphing to the sample population answers they might anticipate as being correct. Since the situation was a new one, on the first ITV viewing occasion, respondents had no way of anticipating procedure and operated blind. On the second ITV viewing occasion, however, the blind was removed due to the first test situation. Instrumentation was maintained in that the instructional television programs transmitted to student groups and the attitude/achievement tests were conducted under the same conditions (e.g., TV transmitted to TV receivers on the same date and time under the same environmental classroom conditions with test time strictly maintained and questions disallowed).

Variables

In assigning and identifying variables, the following were selected:

1. Independent. Those who present academic material on an instructional TV program in psychology (TV teacher, role player, and trained communicator) to college students and the manner of presentation (e.g., lecture mode for role player and TV teacher, and conversational-reading mode for trained communicator).

In respect to the presentors, they varied as it related to age, physical appearance, approach to the subject, and knowledge of same. The TV teacher, for instance, was fifty--clean shaven, dressed in a shirt, tie, and dark suit, wore glasses, was very familiar with the subject, used a script to which he referred, and delivered his material from behind a desk in a formal lecture-reading style.

The role player and trained communicator (the same individual, assuming a different approach to the topic) was forty--had a goatee and moustache, wore no glasses, was dressed in shirt, tie, and sport coat as role player, and no tie or sport coat as trained communicator, had little knowledge of the subject, used the same script as the TV teacher and delivered academic content material from behind a desk in the role-player condition, and both behind and in front of the desk in the trained-communicator condition. In addition, whereas the role-player condition could be labeled more of a lecture approach to the topic, the trained-communicator approach could be labeled more of a conversational approach.

Finally, since the role player and trained communicator had little or no knowledge of the subject, they relied exclusively on a prompting

device which appeared to give the impression of constant eye contact with the audience vs. limited eye contact for the TV teacher who looked down at his script occasionally.

Thus, TV presentors varied as it related to age and appearance, but style of presentation was limited only to reading mode.

2. Dependent. The attitude and achievement scores of college students toward instructional TV presentors (TV teacher, role player, and trained communicator) of academic content in an instructional television psychology program utilizing a 14-item Likert type interval scale to measure attitude for Lesson #1 and #2. Attitudes being measured were Type C (Tuckman, 1972) and included the TV presentor's ability to present material in an exciting manner, organize course material, his knowledge of subject, ability to communicate concepts clearly, sincerity, believability, physical attractiveness, ability to create a relaxed atmosphere, to interpret abstract ideas clearly, maintain eye contact with audience, ability to hold interest, pacing, and likeableness (Appendix 1). A 20-item multiple choice test was used to measure learning for Lessons #1 and #2. The behavioral objectives for Lesson #1 were that the student will be able to:

(1) identify the disciplines from which psychology originated

(2) identify the manner by which early man attributed behavior

(3) identify the most important men who contributed to the historical development of psychology.

The behavioral objectives for Lesson #2 were that the student will be able to:

(1) recognize the historical role of drugs and identify those which cause various forms of dependence

(2) identify by name: drugs used as stimulants, tranquilizers. sedatives, narcotics, or hallucinogens

(3) identify the various effects of the foregoing drugs on the user.

Validity of the tests for both achievement and attitude was ascertained via the concurrence of five faculty members representing different disciplines who were given stated behavioral objectives for each lesson, after which they watched both lessons in entirety. They then adjudged the test instruments and found them valid.

Reliability was ascertained via the corrected split half method by which test items were divided into odd, even, and total number of replies to determine whether there was equal distribution in scoring for each half, with .50 or above being deemed acceptable reliability. Results yielded a coefficient of .52 for achievement on Test #1, .50 for achievement on Test #2, and .87 for the attitude test. Thus, reliability was deemed acceptable.

Due to time limitations (e.g., 75 minutes) to complete the lesson, attitude and achievement measurement tests had to be run concurrently. Hence, this factor limited the number of test items and negated the potential for subtle wording in positive or negative directions or keyed items.

Attitude measures (Appendix 1) were designed to assess the affective response of S's toward the instructor, whereas achievement measures (Appendix 2, 3) were designed to assess the cognitive level of S's for each lesson. Attitude measures originated from a previous study (Wardwell, 1970) wherein some 200 college students enrolled in a psy-

chology course were requested to provide affective responses toward an instructor who used television as a total teaching medium vs. one who used television in a supplemental manner. Achievement measures originated from the TV teacher who regularly presents academic content for students enrolled in a regular academic offering by Central Connecticut State College, New Britain, Connecticut, entitled Psychology 140.

3. Control. The medium of instructional television, academic content used in the psychology course, the number of students in each group or class, the classrooms where ITV programs were received, television receivers utilized, production aspects of the program including lighting, sound, props, and background, and the attitude/achievement tests remained the same and, therefore, constituted control variables.

Procedures

1. The television teacher prepared content and presented it in script form for two lessons, one dealing with the evolution of psychology used the first day of classes in the spring semester of 1975 (January 20) and the second dealing with drugs used in the spring semester of 1975 (February 27).

2. Program content was produced on videotape by the television teacher utilizing lecture-reading mode technique (television teacher condition), the role player using lecture-reading mode technique (role player condition), and the trained communicator utilizing a conversational reading-mode technique (trained communicator condition). Thus, only the manner of presentation varied with a total of six different programs utilizing three different communicators scheduled for three different student groups twice in the semester.

3. Following the training of test administrators (members of the CCSC Television Center), scheduling of classrooms and testing of ITV transmission systems, lessons were viewed by students and tests conducted on the two occasions stipulated. All responses were in written form on data cards tabulated by computer scoring.

Data Analysis

Since the main sources of bias were controlled, the design was a true experimental one with posttest only having the following paradigm:

R_1 (Randomized Group I)
X_1 (TV Teacher Condition)
O_1 (Attitude/Achievement Test)

R_2 (Randomized Group II)
X_2 (Role Player Condition)
O_2 (Attitude/Achievement Test)

R_3 (Randomized Group III)
X_3 (Trained Communicator Condition)
O_3 (Attitude/Achievement Test)

A one-way analysis of variance procedure was used to compute differences in scores on both attitude and achievement posttests with a .05 level of significance utilized. The procedure fits the design since three randomly assigned groups were formed from the sample under study and all were subjected to different treatments.

In computing data, each card was key punched and verified to indicate scores for each S. Attitude replies were afforded numerical weights (e.g., 5-1) whereas achievement scores were only counted if correct. In both cases, scoring was indicated for reliability at the top of each card in terms of odd, even, and total number of correct replies. All data was item analyzed, after which punched cards were

run through a calculator to compute reliability and analysis of variance (ANØVA). The key legend for data follows standard statistical reference (e.g., $\overline{X}$ = mean, σ = standard deviation, d.f. = degrees of freedom, MS = mean square, F = F ratio).

Results

Attitudes

Results of a one-way analysis of variance pertaining to the first hypothesis: that student attitude toward the trained communicator would be significantly more positive than for the television teacher and/or role player are shown in Table 1. As can be seen the null hypothesis was not rejected in the first lesson run presented to S's on January 21, 1975 due to the nonsignificance in results.[1] Although the higher mean score indicated a more positive rating by S's of the trained communicator, the differences between groups, regardless of treatment, was not significant (the F ratio obtained was 2.77, or less than the critical value of 3.12, d.f. = 2/77).

TABLE 1

One Way ANØVA for Lesson #1 (Attitudes between Groups re: Treatments)

Treatment 3 - Trained Communicator Condition Group I	Treatment 2 - Role Player Condition Group II	Treatment 1 - TV Teacher Condition Group III
S = 28	S = 25	S = 27
$\bar{X}$ = 41.21	$\bar{X}$ = 41.28	$\bar{X}$ = 43.67
σ = 9.26	σ = 7.80	σ = 5.16

$p < .05$

	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	104.93	2	52.47	2.77	3.12
Within	4463.75	77	57.97		
Total	4568.69	79			

Result = NO SIGNIFICANT DIFFERENCE IN ATTITUDE TOWARD TV PRESENTORS BETWEEN GROUPS

[1]Although there were three groups with 30 S's in each group, the percentage of S's completing the attitude scale was slightly lower than achievement in Lesson #1. The attrition factor may have been due to some confusion experienced by S's since the experiment was run on the very first day of class in the spring semester, a condition corrected in the second lesson run.

Similar results were achieved for attitude in Lesson #2 presented to S's on February 27, 1975 as reported in Table 2. In this case, although a slightly more positive mean score was afforded the role player than either the trained communicator or TV teacher, the difference was insignificant (the F ratio obtained remained at 2.77 which was less than the critical value of 3.98, d.f. = 2/87). Thus in subjecting S's to varying treatment, the null hypothesis was not rejected.

TABLE 2

One Way ANØVA for Lesson #2 (Attitudes between Groups re: Treatments)

Treatment 1 - TV Teacher Condition Group I	Treatment 3 - Trained Communicator Condition Group II	Treatment 2 - Role Player Condition Group III
S = 30	S = 30	S = 30
$\overline{X}$ = 46.90	$\overline{X}$ = 49.41	$\overline{X}$ = 50.13
σ = 6.26	σ = 5.62	σ = 4.73

$P < .05$

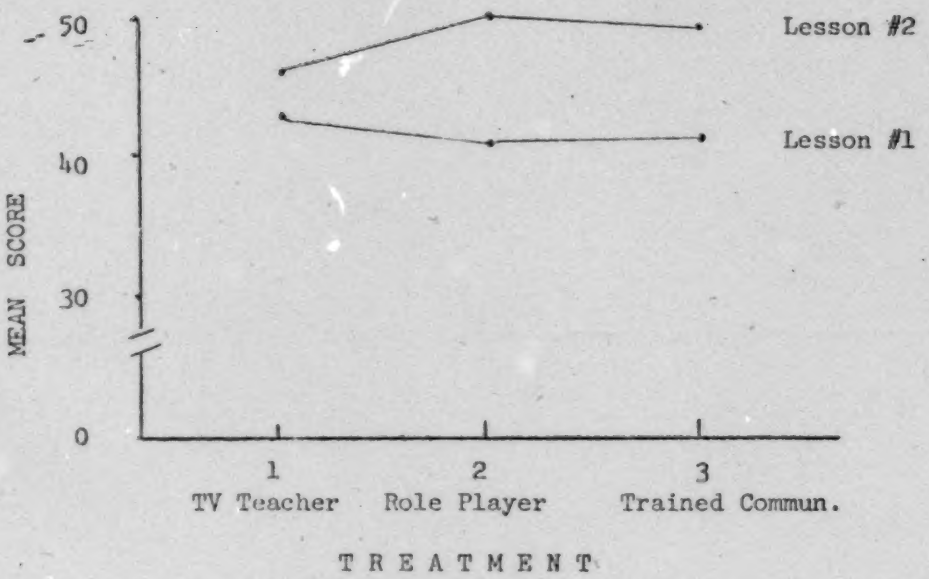
	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	172.42	2	86.21	2.78	3.10
Within	2701.37	87	31.05		
Total	2873.79	89			

Result = NO SIGNIFICANT DIFFERENCE IN ATTITUDE TOWARD TV PRESENTORS BETWEEN GROUPS

In Figure 1 the results of the two one-way ANØVA's for Lesson #1 and #2 are summarized. The comparison of mean attitude scores for each treatment reveals relatively little significance except for Lesson #2 where the mean for the role player condition was slightly higher.

Figur 1

Comparison of Group Attitude Scores (Lessons #1 and #2)



To determine whether there was a difference in the way S's rated treatments by lesson, it was determined to conduct a two-way ANØVA in which the attitude scores of all S's in Lessons #1 and #2 were combined. Results showed no significant difference in the way S's rated treatment by presentors. However, when all rows were combined there was an obvious difference in mean score rankings between the 1st and 2nd lesson in that the means for Lesson #2 were much higher than Lesson #1 (e.g., 48.81 vs. 42.06).

TABLE 3

Two-Way ANØVA for Lessons #1 and 2
(Attitudes toward treatments by Lesson)

	Treatment 3 Trained Communicator Cond. Group I	Treatment 2 Role Player Condition Group II	Treatment 1 TV Teacher Condition Group III	Combined
Lesson 1	S = 28 $\bar{X}$ = 41.21	S = 25 $\bar{X}$ = 41.28	S = 27 $\bar{X}$ = 43.67	S = 80 $\bar{X}$ = 42.06
Lesson 2	S = 30 $\bar{X}$ = 46.90	S = 30 $\bar{X}$ = 49.41	S = 30 $\bar{X}$ = 50.13	S = 90 $\bar{X}$ = 48.81
Combined Les 1 & 2	S = 58 $\bar{X}$ = 45.45	S = 55 $\bar{X}$ = 46.11	S = 57 $\bar{X}$ = 45.37	

$p < .05$

This factor led us to a two-way ANØVA for lesson and treatment shown in Table 4, whereby the combined rows were checked and the interaction between lessons and treatment compared. It was found that the lesson F ratio row exceeded critical value. This difference proved significant in that the F ratio obtained was 43.88, more than the critical value of 3.84 (d.f. = 1). This finding plainly revealed a less positive attitude rating for Lesson #1 which concerned itself with a history of psychology given at the beginning of the study than Lesson #2 given several months later which concerned itself with drugs.

Attitude interaction by S's toward TV presentors in lessons among groups revealed near significance in that the F ratio obtained was 2.95 vs. a critical value of 3.06 (d.f. = 2). This finding again proved there was no significance in the way S's rated presentors (e.g., treatment).

TABLE 4

Two-Way ANØVA on Lesson and Treatment for Lesson #1 and 2 (Attitude)

	Sum of Squares	d.f.	Mean Squares	F Ratio	Critical Value
SS Lesson	1928.91	1	1928.91	43.88	3.84
SS Condition	18.43	2	9.22	.62	3.06
SS Interaction	258.92	2	129.46	2.95	3.06
SS Within	7165.12	163	43.96		3.84
SS Total	9371.38	169			

Result = 1. NO SIGNIFICANCE IN ATTITUDE TOWARD TV PRESENTORS IN LESSONS AMONG GROUPS

2. SIGNIFICANCE IN ATTITUDE TOWARD LESSONS AMONG GROUPS

Since it was discoyered that there was no significant difference in attitude by S's toward TV presentors among groups it then seemed appropriate to determine whether any of the fourteen individual measures in the attitude test would yield significant differences. Therefore, a one-way ANØVA was conducted for each measure in the attitude test for Lesson #1 and #2. Results showed only two measures to yield significant differences--these were questions 5 and 12. Question 5 concerned itself with the instructor's general ability to communicate concepts clearly. The difference in significance for question 5 occurred only in Lesson #2 where the more positive mean score was afforded the role player than trained communicator. As noted in Table 5, the difference was significant in that the F ratio obtained was 3.18, more than the critical value of 3.12 (d.f. = 2/75).

TABLE 5

One-Way ANØVA for Lesson #2
(re: Attitude between Groups toward Instructor's Ability to Communicate Concepts Clearly - Question 5)

Treatment 3 - Trained Communicator Condition Group I	Treatment 2 - Role Player Condition Group II	Treatment 1 - TV Teacher Condition Group III
S = 24	S = 27	S = 27
$\overline{X}$ = 2.50	$\overline{X}$ = 3.23	$\overline{X}$ = 2.96

$p < .05$

	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	6.74	2	3.37	3.18	3.12
Within	79.63	75	1.06		
Total	86.37	77			

Result = SIGNIFICANCE IN ATTITUDE (MORE POSITIVE) TOWARD ROLE PLAYER THAN TRAINED COMMUNICATOR

The other significant difference was in question 12, Lesson #1 and #2, where the attitudes S's displayed toward treatments varied. The measure concerned itself with the instructor's speed of presentation (e.g., fast vs. slow). In Lesson #1, results showed a more positive mean score afforded the TV teacher than either trained communicator or role player but with the greater difference residing between TV teacher and trained communicator. As noted in Table 6, the difference was significant in that the F ratio obtained was 3.53, greater than the critical value of 3.10 (d.f. = 2/87).

TABLE 6

One-Way ANØVA for Lesson #1
(Attitude between Groups re: Instructor's Speed of Presentation-Question 12)

Treatment 3 - Trained Communicator Condition Group I	Treatment 2 - Role Player Condition Group II	Treatment 1 - TV Teacher Condition Group III
S = 30	S = 30	S = 30
$\overline{X}$ = 2.30	$\overline{X}$ = 2.90	$\overline{X}$ = 3.87

p < .05

	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	6.07	2	3.03	3.53	3.10
Within	74.83	87	.86		
Total	80.90	89			

Result = SIGNIFICANCE IN ATTITUDE (MORE POSITIVE) TOWARD TV TEACHER THAN ROLE PLAYER.

In question 12, Lesson #2, the greater significance in attitude toward treatments resided between role player and TV teacher in that a more positive rating was afforded the role player than teacher. As noted in Table 7, the difference was significant in that the F ratio obtained was 9.04, much greater than the critical value of 3.11 (d.f. = 2/77).

TABLE 7

One-Way ANØVA for Lesson #2
(Attitude between Groups re: Instructor's Speed of Presentation - Question 12)

Treatment 3 - Trained Communicator Condition Group I	Treatment 2 - Role Player Condition Group II	Treatment 1 - TV Teacher Condition Group III
S = 25	S = 27	S = 28
$\overline{X}$ = 1.84	$\overline{X}$ = 2.78	$\overline{X}$ = 1.57

p .05

	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	21.80	2	10.90	9.04	3.11
Within	92.88	77	1.21		
Total	114.69	79			

Result = SIGNIFICANCE IN ATTITUDE (MORE POSITIVE) TOWARD ROLE PLAYER THAN TV TEACHER.

Achievement

A second hypothesis, that student learning would be the same regardless of whether students watched the television teacher, role player, or trained communicator was REJECTED in Lesson #1. There was, in fact, a significant difference, depending on treatment. For instance as reported in Table 8, the mean for the trained communicator condition was more positive than for either role player or TV teacher in that the F-ratio obtained was 3.86, greater than the critical value of 3.10 (d.f. = 2/85). To determine where significant differences resided between groups, a Scheffé test was conducted in which it was found that the greater difference resided between Groups I (receiving Treatment 3 - trained communicator condition) and Group II (receiving Treatment 2 - role player condition).

TABLE 8
ANØVA Lesson #1 (Achievement between Groups)

Treatment 3 - Trained Communicator Condition Group I	Treatment 2 - Role Player Condition Group II	Treatment 1 - TV Teacher Condition Group III
S = 28	S = 30	S = 29
$\bar{X}$ = 12.71	$\bar{S}$ = 10.71	$\bar{X}$ = 11.90
σ = 2.76	σ = 2.78	σ = 2.83

$p < .05$

	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	60.20	2	30.09	3.86	3.10
Within	662.80	85	7.80		
Total	722.99	87			

SCHEFFÉ MULTIPLE COMPARISON (SIGNIFICANCE VALUE)

I vs. III	I vs. II	II vs. III
0.6	3.78	2.71

Result = SIGNIFICANT DIFFERENCE IN LEARNING BETWEEN GROUPS I AND II

No difference in achievement was obtained in Lesson #2. In fact, as noted in Table 9, the mean average score regardless of treatment was nearly the same (e.g., 13.3 for Group I vs. 13.2 for Group II vs. 13.7 for Group III). The F ratio obtained was 0.51, much less than the critical value of 3.98 (d.f. = 2/86). Thus, hypothesis 2 was ACCEPTED in Lesson #2 vs. its rejection in Lesson #1.

TABLE 9

ANOVA for Lesson #2 (Achievement between Groups)

Treatment 3 - Trained Communicator Condition Group I	Treatment 2 - Role Player Condition Group II	Treatment 1 - TV Teacher Condition Group III
S = 30	S = 29	S = 30
$\bar{X}$ = 13.33	$\bar{X}$ = 13.21	$\bar{X}$ = 13.77
σ = 2.41	σ = 2.13	σ = 2.16

$p < .05$

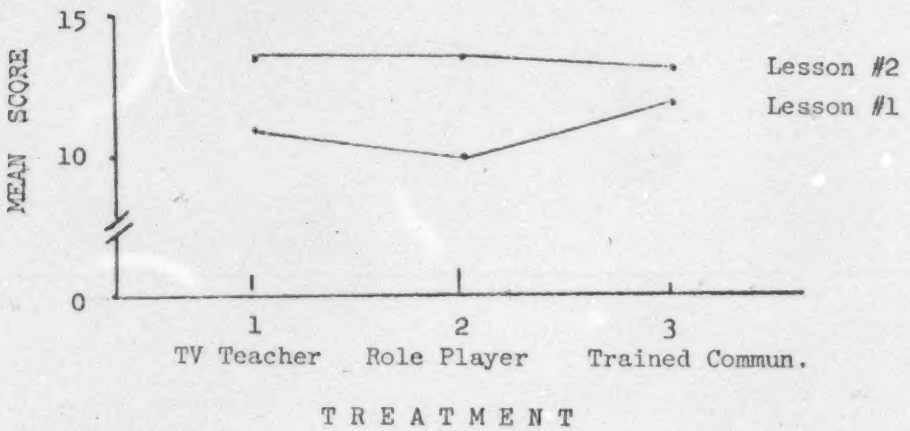
	Sum of Squares	d.f.	Mean Squares	F. Ratio	Critical Value
Between	5.12	2	2.564	.51	3.98
Within	430.80	86	5.01		
Total	435.92	88			

Result = NO SIGNIFICANT DIFFERENCE IN ACHIEVEMENT BETWEEN GROUPS

Results for ANØVA's for Lesson #1 and #2 group achievement are summarized in Figure 2. One immediately notices little or no variation in achievement for Lesson #2 regardless of treatment vs. a slight drop in achievement for Lesson #1 as it pertains to the role-player condition.

Figure 2

Comparison of Achievement Scores between Groups for Lesson #1 and #2



Discussion

The main results in this experiment showed that student attitudes toward the trained communicator in both instances were not, as originally hypothesized, more positive than for role player or TV teacher. Results also revealed that achievement was significantly different between groups depending on who was presenting content (e.g., trained communicator, role player, or TV teacher). Additionally, groups rated all TV presentors higher in Lesson #2 where the academic content was drugs than in Lesson #1 where the academic content was the history of psychology. The fact that all groups produced different means in the first lesson run where the hypothesis was rejected for achievement and similar means in the second lesson run where it was accepted suggests a number of plausible reasons for academic speculation.

Research by Myers (1961) in which he found that college students were equally effective in achievement and attitude regardless of whether presentors were experienced or inexperienced and by Kanner (1958) in which no differences in achievement were found by Army trainees subjected to experienced vs. inexperienced teachers should have signaled that we would have obtained similar results. Similarly the findings of Westley and Mobius (1960) in which eye contact was discounted as making no differences in attention, interest, or learning should have provided still another signal.

The rationale supporting the original hypothesis, that affective ratings would be influenced by the ability of the trained communicator to use visuals to focus attention, maintain eye contact, use physical

movement and present material in a more relaxed manner did not appear to influence the outcome. Perhaps this was due to the fact that the trained communicator did not present material in a manner or style significantly different from the role player or TV teacher. Thus, this factor may have been a failure in design. It may also be true that although physical movement and a relaxed manner are essential in commercial television and film acting, they may be diluted in the instructional arena where subjects have been conditioned to the note-taking process.

In order to determine additional critical areas affecting the unanticipated outcome, several potential limitations were considered, dilineated and given to S's as a follow-up ex post facto study in written questionnaire format (see Appendix 4). Briefly, there was consensus that the attitude test gave respondents enough time to rate presentors, that the achievement test was balanced and well constructed, that no attempt was made to rate presentors other than the TV teacher more negatively because of nonparticipation in class discussion, that there was limited resentment about having to leave the main class and proceed to viewing rooms for the experiment, that there was limited resentment about being tested without prior warning, that there was no significant barrier to listening due to familiarity with the lesson concept, that the achievement test was not too easy, that there was positive reaction about student opinion toward TV presentors and that students would NOT have ranked presentors differently if they had been introduced as experts. The greater variation in rankings on these two questions, however, existed in Group I. This group was more critical in all param-

eters than Groups II and III. It was also this group that achieved higher scores in the achievement test when given the trained communicator condition. Thus, one may logically inquire whether S's in this group, although randomly selected from the total population, might have had lower tolerance limits for rating presentors. Perhaps it would be wise, in light of this possibility, to assess the probable bias factor of subjects to treatment conditions in future experiments before proceeding with random groups. However, a very carefully worded instrument would have to be developed to effectively guage such bias--a study in itself.

Figures 3 through 12 illustrate comparative responses to the feedback questionnaire for both lessons in which S's receiving different treatments in each group denoted their degree of agreement with the question.

Figure 1

#1 The attitude test gave me enough items to rate the instructor.

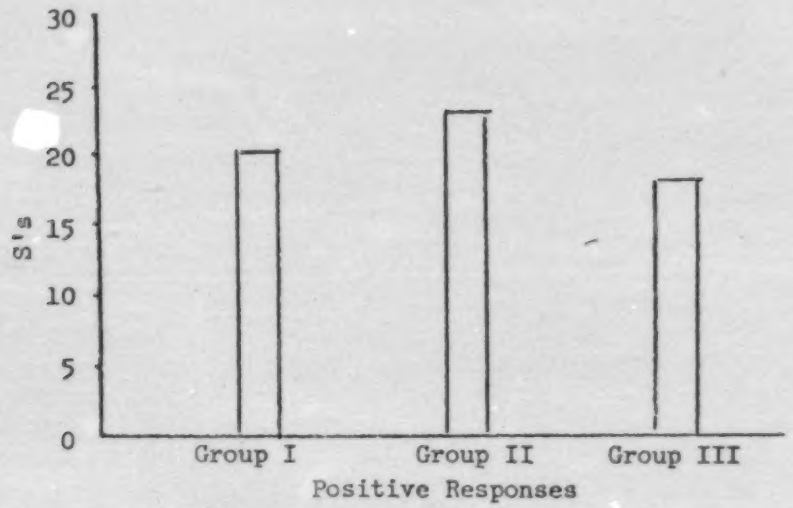


Figure 2

#2. The achievement test seemed to be fairly balanced and well constructed

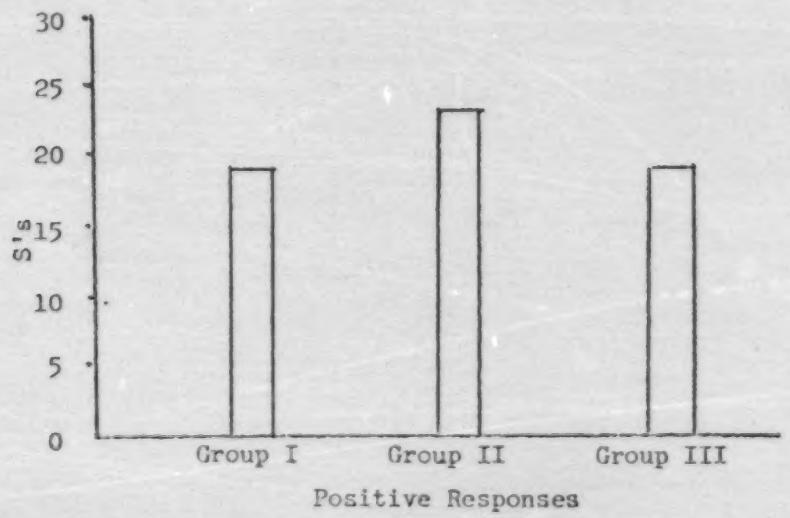


Figure 5

#3. I rated the TV presentor who was not our regular professor more negatively because he was never in class and did not participate or contribute to class discussion.

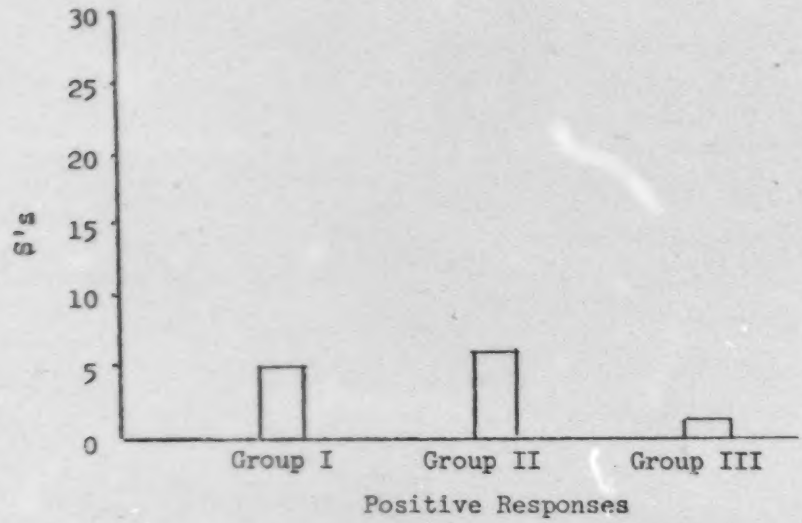


Figure 6

#4. I resented having to leave the main class and go to another viewing room.

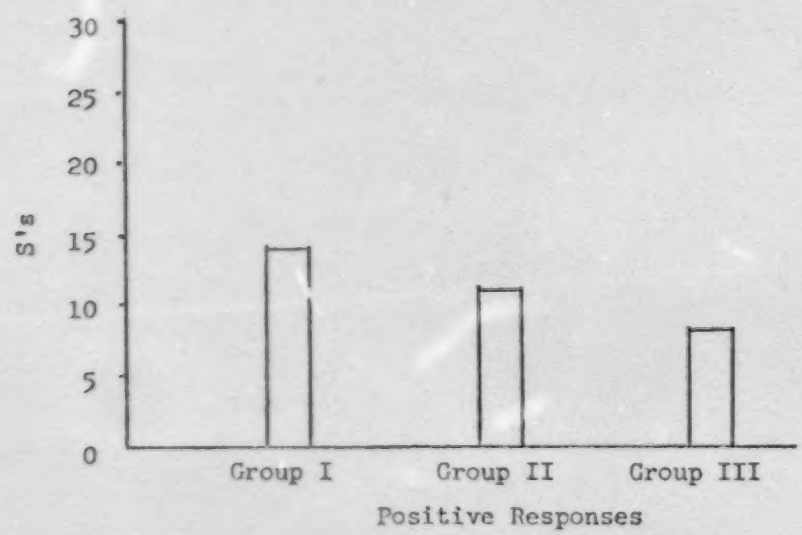


Figure 7

#9. I liked the idea of someone asking for my opinion re: the TV teachers.

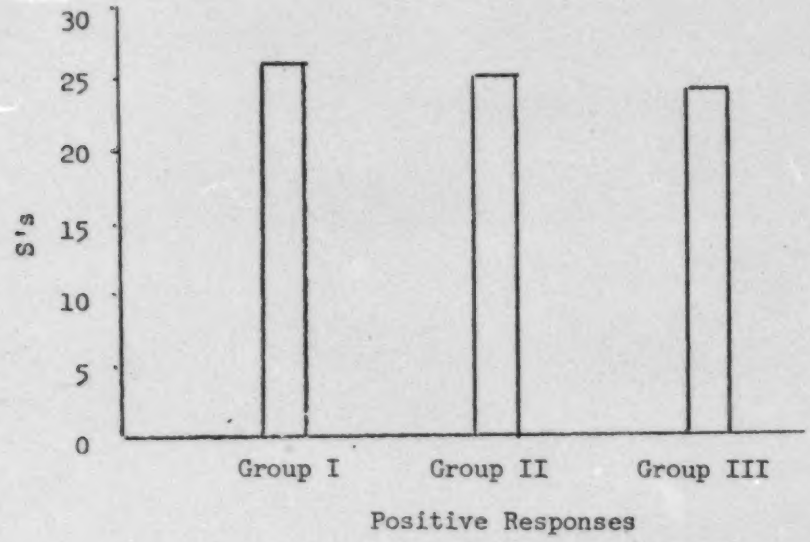


Figure 8

#10. If the TV professors, other than the regular professor (Dr. Taylor), had been introduced as experts, my attitude and interest might have been different.

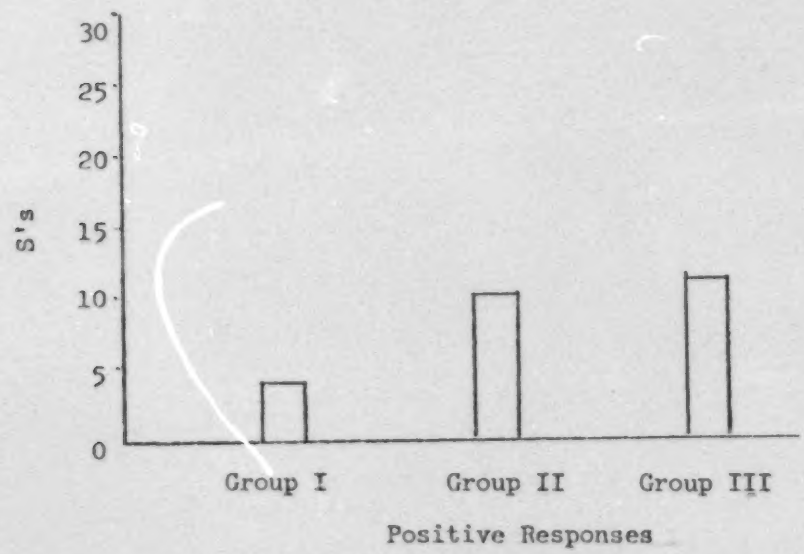


Figure 9

#7. I'm familiar with drugs and therefore didn't listen to the instructor very closely.

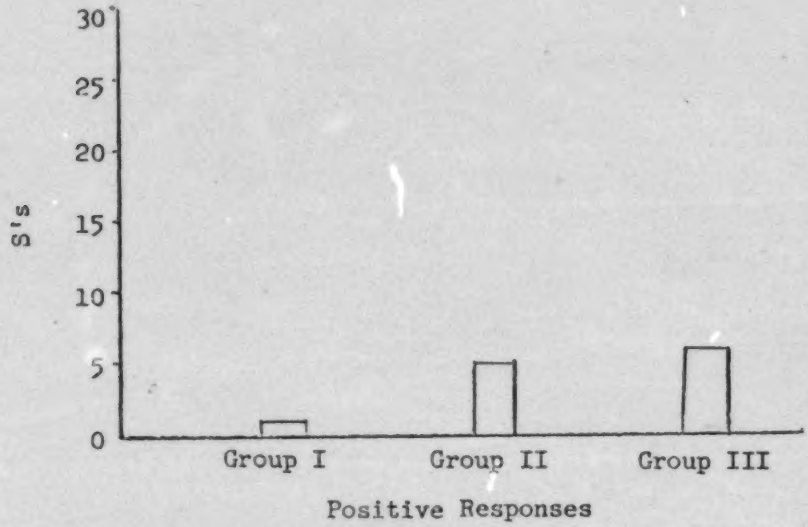


Figure 10

#8. The achievement test was too easy in both TV lessons in the classroom.

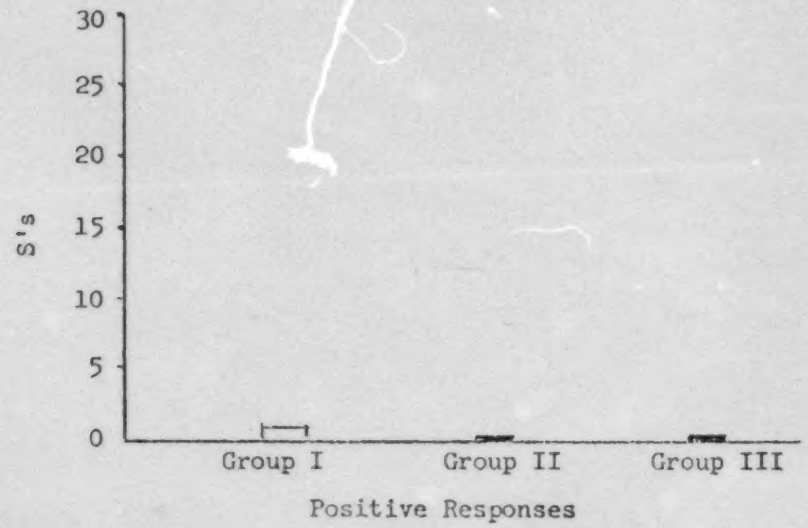


Figure 11

#5. There was too much information in each lecture and it could have been cut down substantially.

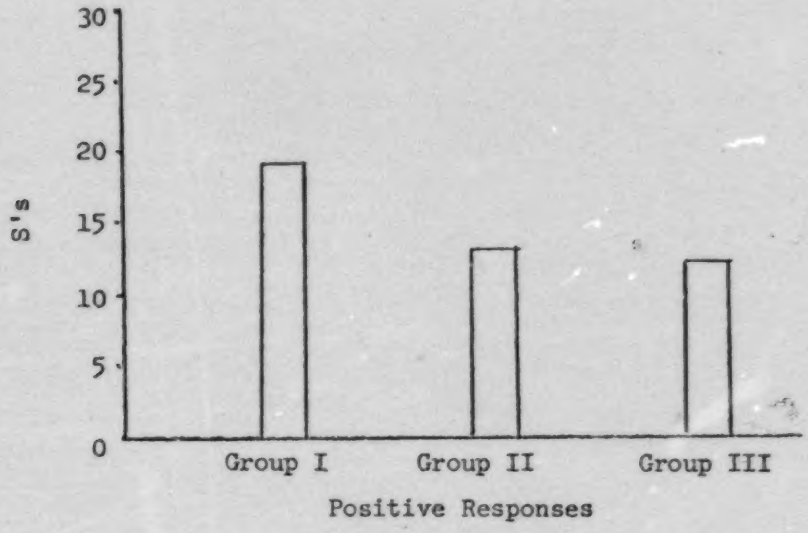
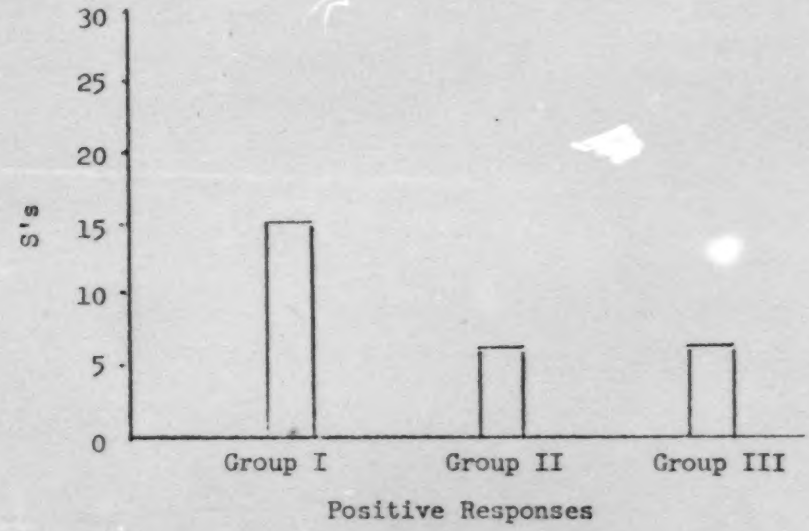


Figure 12

#6. I resented being tested on these lessons without warning.



Two of the feedback questions (e.g., Question 3 relating to instructor contact and Question 10 relating to credibility of the source) were purposely designed around research findings conducted by other scholars. For instance, a doctoral study conducted by Fisher (1969) found a definite relationship between student achievement when laboratory sessions were used with televised instruction. Results of his study also indicated that the greater the opportunity for personal contact with the instructor, the more positive was student attitude toward the course. Since no contact was made by students in the present experiment with either the trained communicator or role player, one would suspect that achievement/attitude ratings would reflect this factor. Yet, this did not appear as a limitation in the present experiment.

The second limitation, if we are to take cognizance of the very substantial studies on source credibility by Hovland and Weiss (1951), is that audience reactions are significantly affected by the credibility of the source. In this experiment the trained communicator and role player were introduced as "members of the psychology department" rather than authorities. In fact, source credibility was purposely unstated in order to avoid influencing results. When students were queried as to whether their attitude ratings would have been altered if presentors had been introduced as authority figures, the majority said it would NOT have appreciably changed their evaluation, although, in fact, its influence may have been pervasive though subtle.

Perhaps an additional factor contributing to no significant differences in attitude rankings by TV presentors was the fact that content

was unaltered by the trained communicator. Research by King and Janis (1953) supports the possibility that a person who reformulates communication in his own words creates a marked gain in listener comprehension and interest, augmenting the potential for more persuasive messages. In their research, the authors noted a definitive rise in interest when content was presented to college students in a language and style more natural to the presentors.

Research by Sharp (1938) further supports this view. In his study it was found that use of phrases by a communicator in his own language and style, or the style of the audience, may contribute to a significantly more positive attitude by listeners.

In addition, there is evidence to support the contention that edited instructional TV material is preferred by college students over un-edited material. Alyward (1960) noted in his research, that where content was edited there was much greater acceptance by students. However, in the present study although shorter lessons were preferred, no editing was attempted and academic content was presented in its entirety.

Thus, in the very design of this study wherein the trained communicator did not adapt the message to the medium, did not edit academic material or paraphrase content, the no-significance result may have been predicted. However, if such license had been permitted and controls altered to make the message fit the medium or provide the trained communicator with greater freedom, several criticisms may have evolved. First, academic faculty members might have argued that show business tactics were employed to manipulate outcome. Secondly, we

would not have known for certain whether, with all factors being equal, similar cognitive and affective results would have been achieved when the same academic content was presented via lecture-reading mode vs. conversational-reading mode. Thirdly, lacking controls, speculation would have persisted that basic mechanical communicative functions (e.g., eye contact, physical movement, use of visuals) would influence attitude and/or achievement.

Thus, although one may justifiably argue that in this study the full potentiality of a trained communicator's ability was constricted by stringent control, one may also argue that the study provided empirical data which says (1) there is no difference in attitude when the same academic material is given to college students regardless of the style of presentation (e.g., formal lecture-reading mode or conversational) or the presentor (e.g., trained communicator, role player or TV teacher); (2) there is a difference in achievement depending on who presents academic material to college students and at what speed; and (3) attitude ratings by college students toward TV presentors seem to be affected by topic.

An inference may be made as a result of present findings that would suggest that if there is no difference in attitudes but an increase in achievement when students are presented with a trained communicator rather than a subject-matter specialist, further use of a trained communicator should be studied.

A second inference is that future research designs should be formulated to encourage utilization of a trained communicator who will

edit or change academic content to fit his own style, that of the audience, or television medium.

A third inference, based on the present findings, is that additional inquiry should be aimed at the suggestion that what's in the lesson (e.g., topic) may directly influence attitude. Weiss (1953) suggested that where there is a strong resistance to content the recipient may neither learn nor accept it. The fact that the two-way analysis of variance plainly revealed higher attitude ratings for all TV presentors on one topic vs. another should lead future researchers to systematically determine the interest level of college students toward particular topics as well as toward those who present them.

The fact that students do not resent research designed to elicit their frank opinions, the fact that they are eager and vocal in supporting such inquiry, leads to a number of recommendations.

First, it appears obvious that greater latitude should be exercised in varying the style of presenting ITV material in order that differences will be more pronounced. Second, it appears that a great deal more pretesting on ITV sample populations is in order before a valid model can be evolved. Third, it seems essential that test instruments designed to measure cognitive gain be more closely scrutinized and designed to affect higher reliability. Fourth, it seems imperative, if we are to duplicate the success factor currently enjoyed by commercial TV programs and personalities that we seriously study their organizational testing methods on pilot audiences (e.g., telephone interview, personal interview, digital program readouts, diary). Finally, it seems advisable that we identify by comparative studies, which communicative

abilities an individual must possess to engender positive ratings by respondents enrolled in or subjected to instructional television programs. Hypothesizing about these qualities is not the same as identifying them in specific terms or characteristics.

To accomplish these ends, it appears that we need a new approach to research constructs which challenges us to seek out treatments which will increase student learning while making the learning process enjoyable. Perhaps as Davison and Yu (1974) have recommended, this will require the input of research teams composed of sociologists, psychologists, political scientists, and technologists.

There seems to be every reason to believe that instructional television requires the same ingredient that all teaching requires in higher education: inspired teaching. It seems equally probable that we must not assume that the learning process cannot be entertaining or enjoyable. The record of "Sesame Street" has proved that it can be both for students in elementary grades while the record of the "Ascent of Man" series has proven it can work for higher education.

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Autobiography of the Author

I was born from naturalized American parents in St. Stephen, New Brunswick, Canada, on July 7, 1934, attended elementary schools in Eastport, Maine, Clarement and Concord, New Hampshire, and completed high school at Calais, Maine, in 1952. Following graduation, I entered Boston University's School of Public Relations and Communications where I majored in communication arts (radio, television and film) graduating in 1956 and marrying Jane Wardwell of Portland, Maine. Subsequently, I was employed as a newscaster and staff announcer at WONO radio (Southbridge, Massachusetts), as a newscaster/personality at WSPR radio (Springfield, Massachusetts), and as a radio personality/disc jockey at WPOP radio (Hartford, Connecticut). In 1959 I entered graduate school at Syracuse University to receive an MS degree in television. From 1960-67 I was employed by the University of Connecticut as radio-television specialist for the extension service where I was responsible for the production of radio, television, and film programs. In 1967 I assumed my present duties as director of television at Central Connecticut State College where I am responsible for the administration of the CCSC television center.

SIGNATURE PAGE

I certify that I have read and am willing to sponsor this Major Applied Research Project submitted by DOUGLAS O. WARDWELL. In my opinion it conforms to acceptable standards and is fully adequate in scope and quality as a Major Applied Research Project for the degree of Doctor of Education at Nova University.

Bruce W. Tuckman

Dr. Bruce Tuckman, MRP Advisor

I certify that I have read this Major Applied Research Project and in my opinion it conforms to acceptable standards for a Major Applied Research Project for the degree of Doctor of Education at Nova University.

Richard Krall

Dr. Richard Krall, Clustor Coordinator

This Major Applied Research Project was submitted to the Central Staff of the Nova University Ed.D. Program for Community College Faculty and is acceptable as partial fulfillment of the requirements for the degree of Doctor of Education.

George Barton

Dr. George Barton, Nova University Central Staff Member